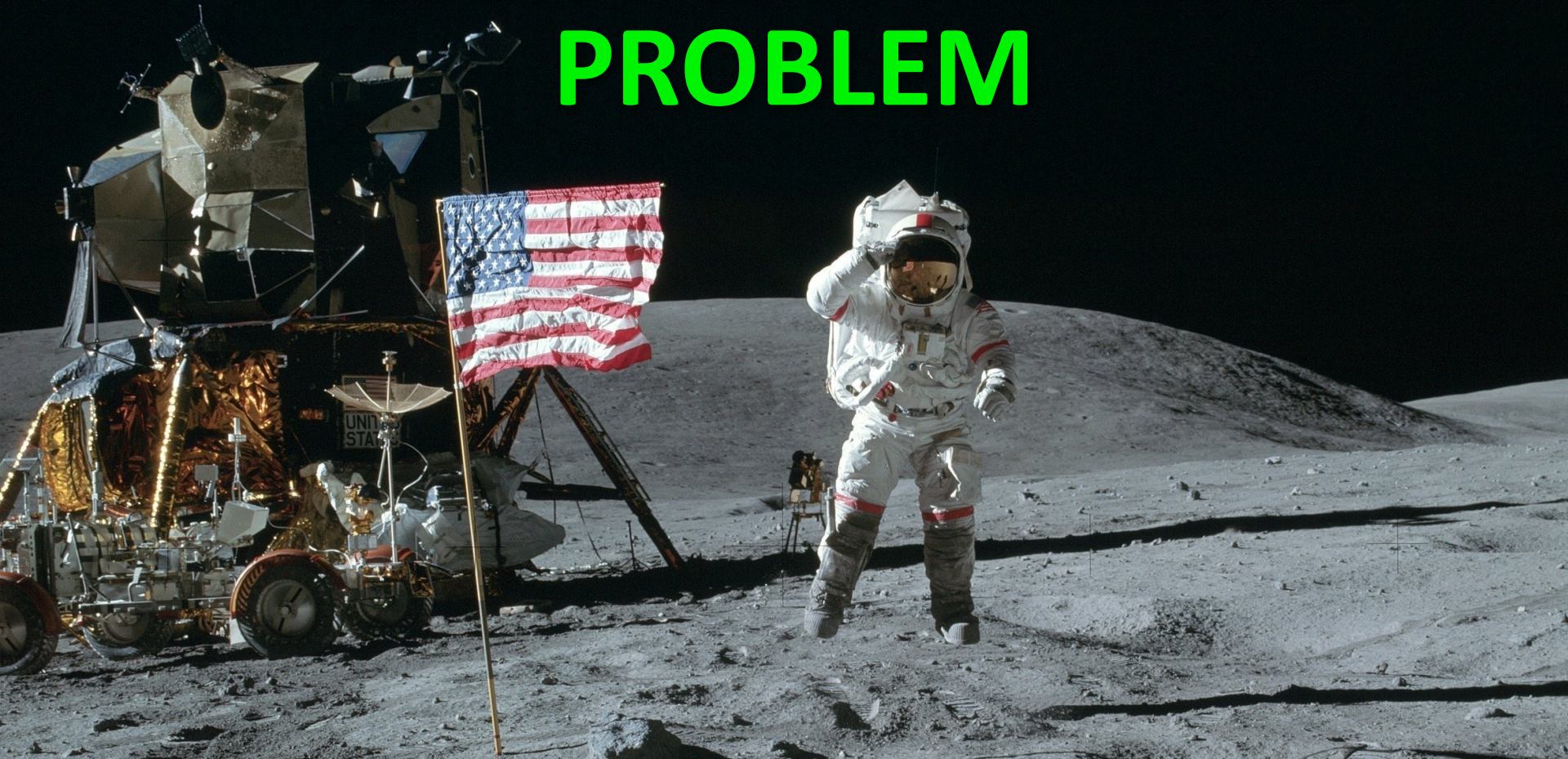


GRAVITY IS A MASSIVE PROBLEM

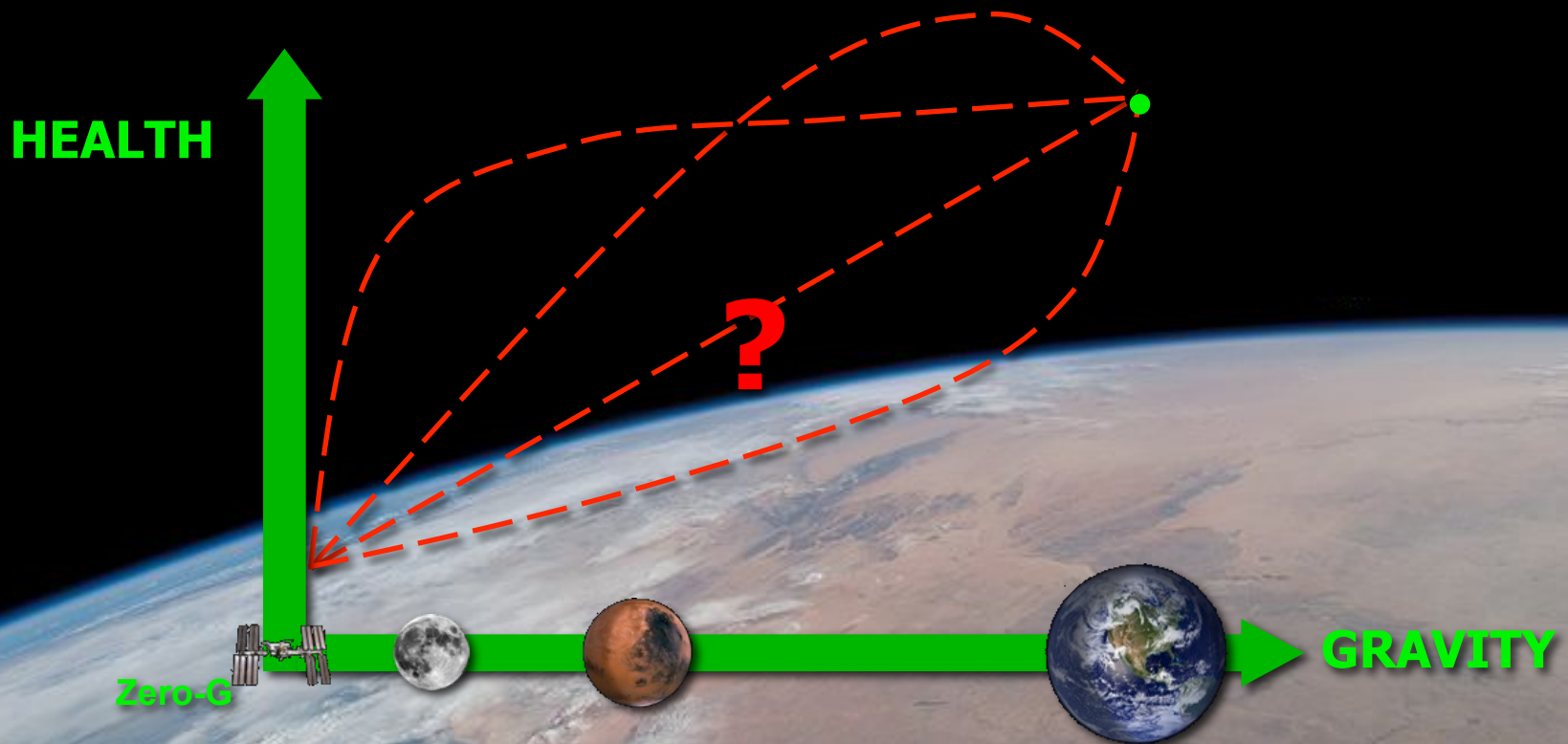


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The Great Enterprise

Partial G Research is Vital



Why G-Lab?

*“Fifty years after the creation of NASA, our goal is no longer just a destination to reach. Our goal is the capacity for people to work and learn and operate and live safely beyond the Earth for extended periods of time, ultimately **in ways that are more sustainable and even indefinite.**”*

From the Introduction to US National Space Policy, June 2010



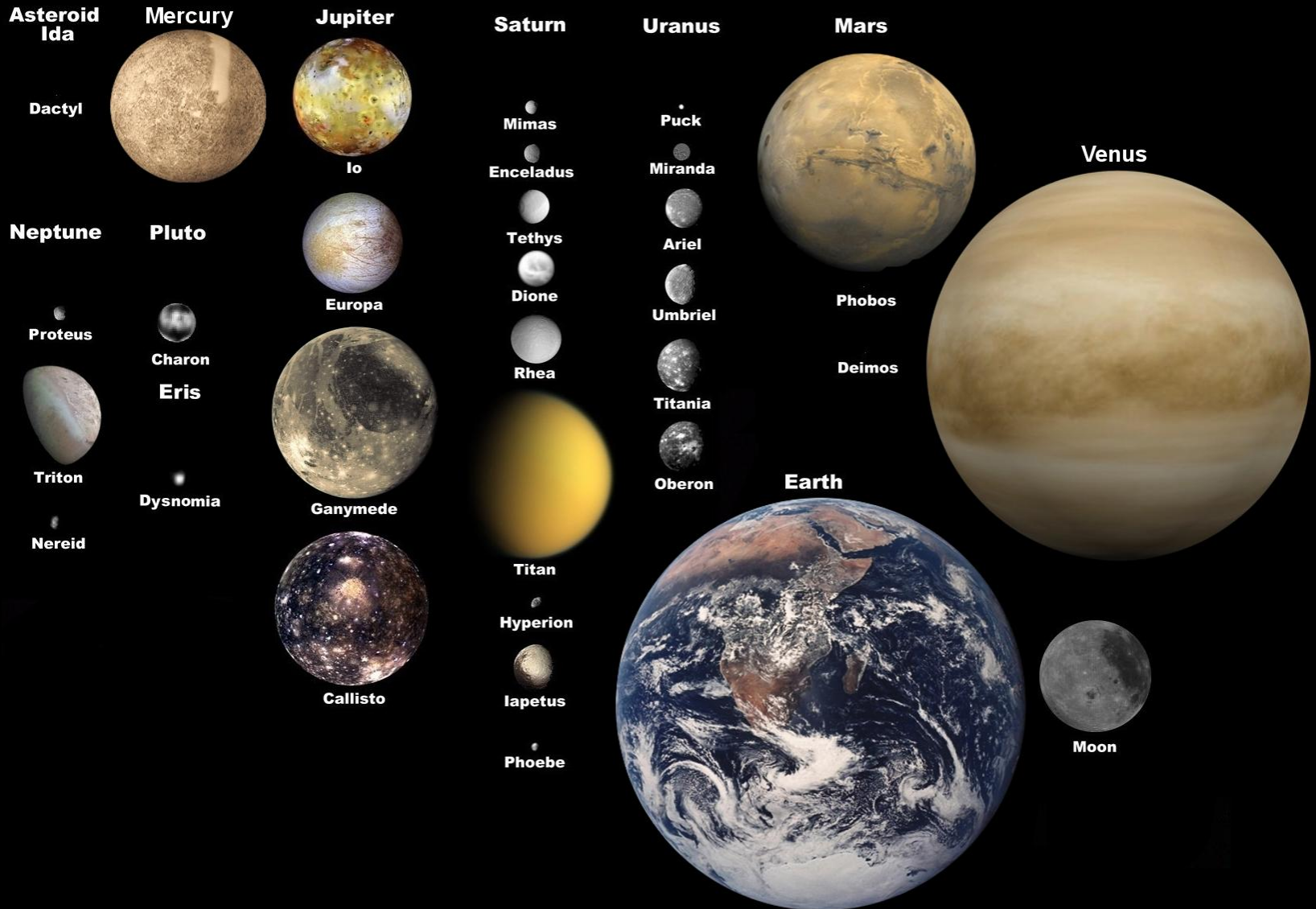
Why G-Lab?

*“Finally, despite its awareness that the [NASA] large centrifuge program has little likelihood of being restarted, the ...Panel would be remiss if it did not **strongly recommend an animal centrifuge** capable of accommodating rats/mice at variable gravity levels.”*

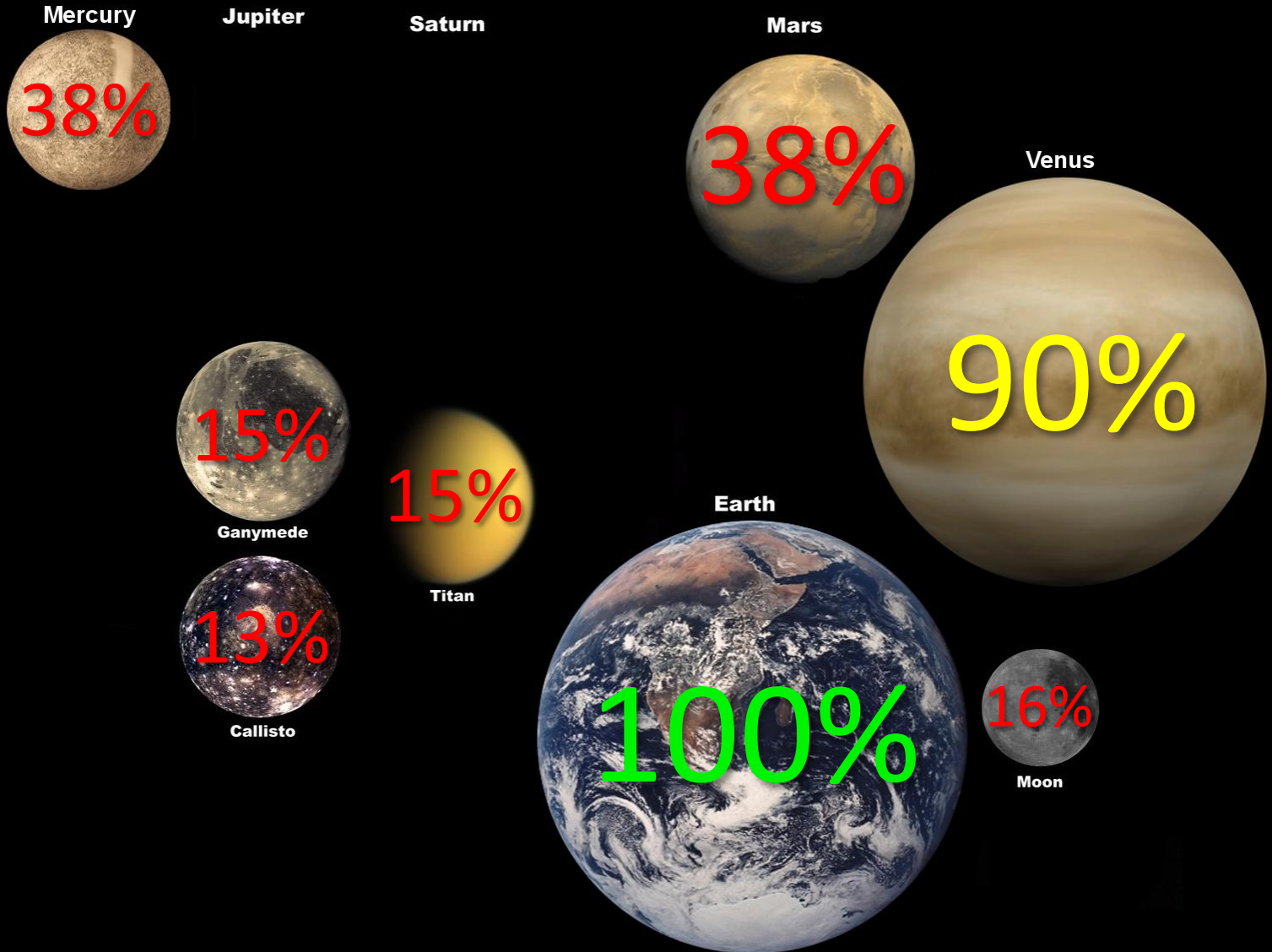
From The National Research Council
Decadal Survey on Biological and Physical Sciences in Space 2011



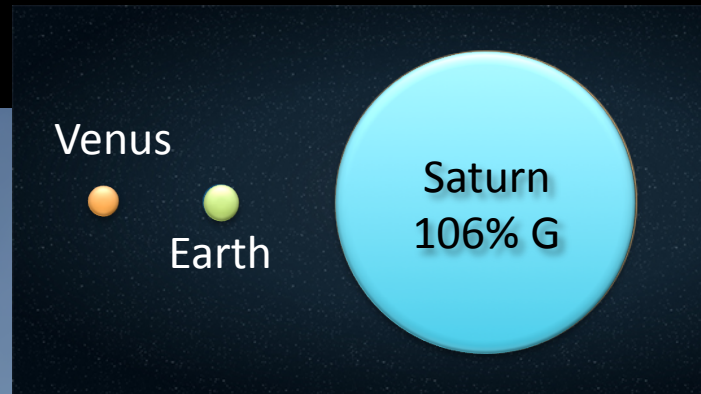
Multi-planetary?



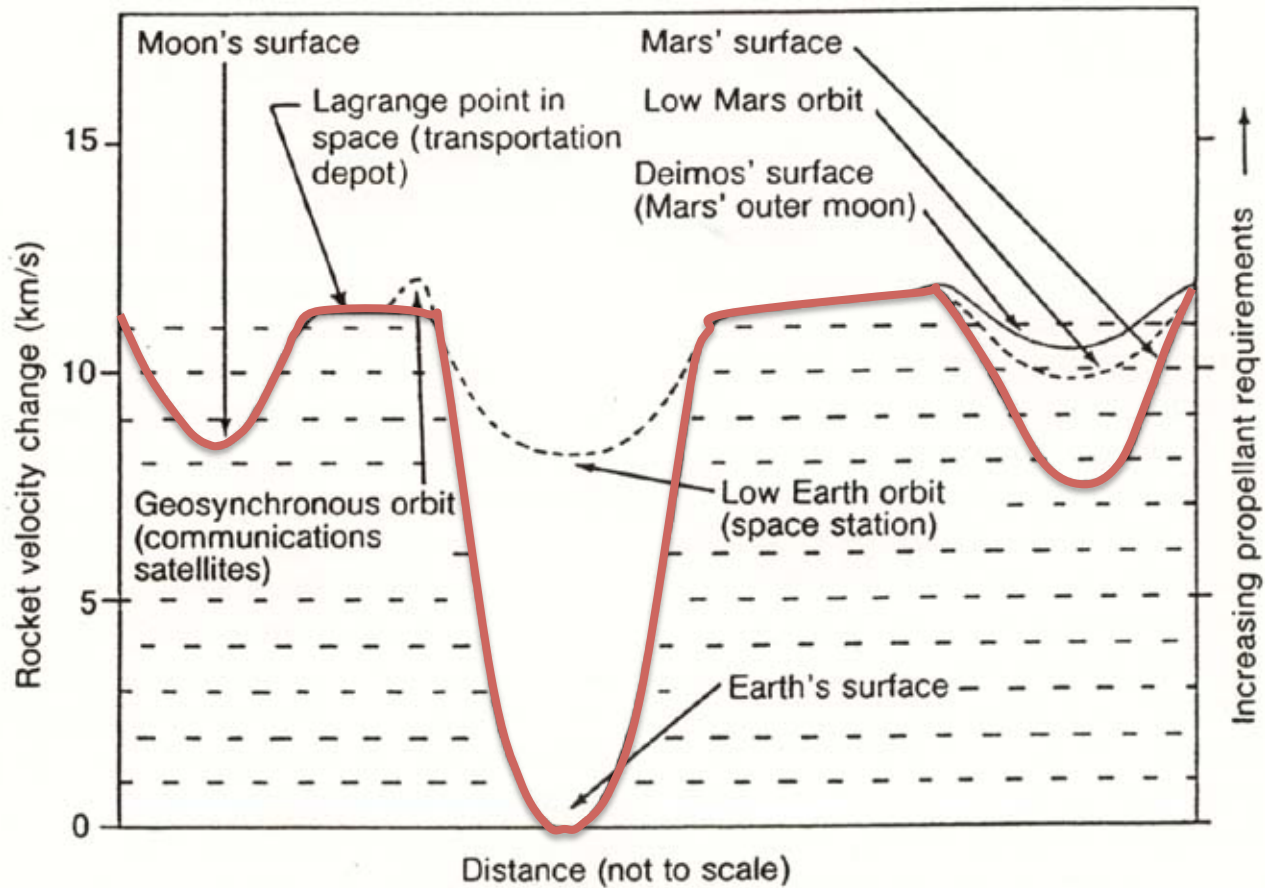
Percent of Earth Normal G



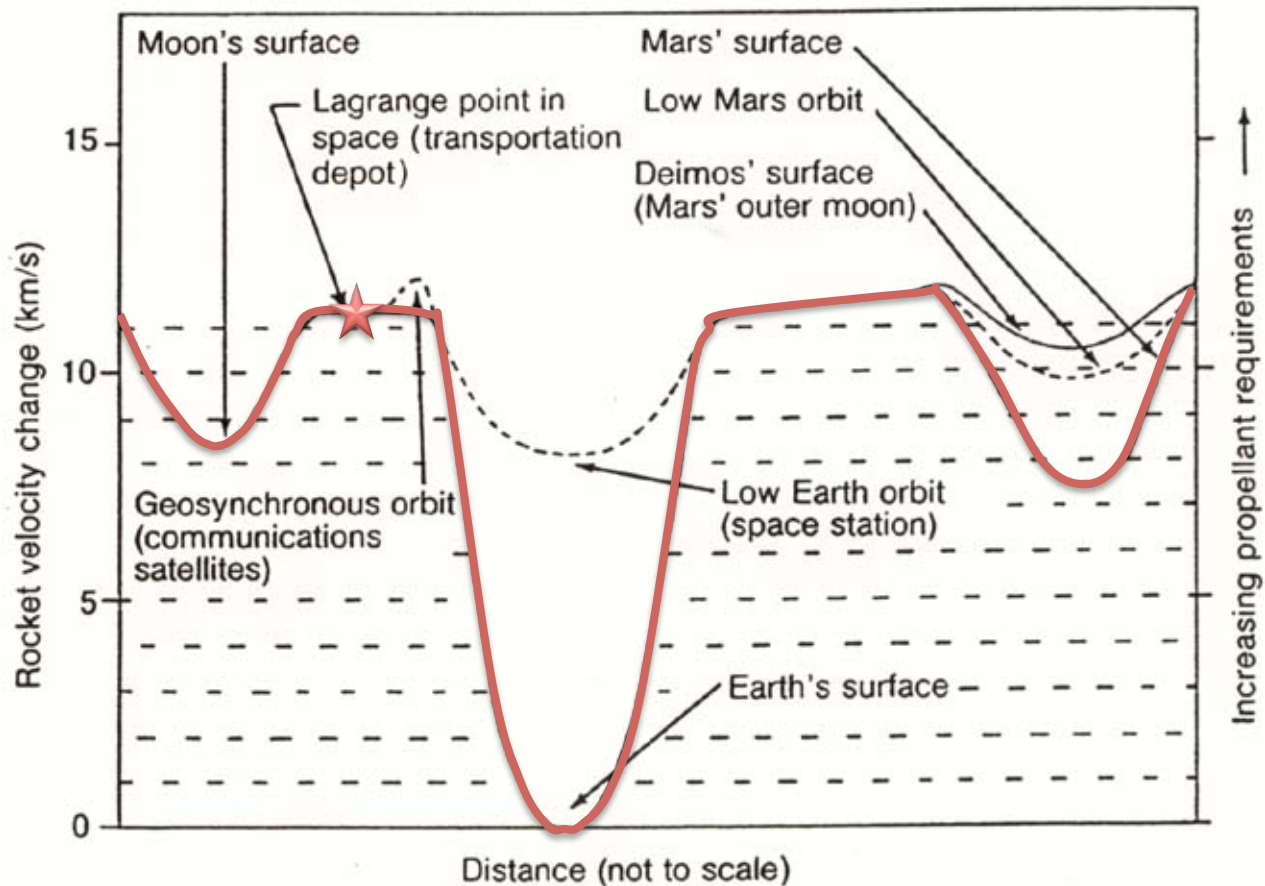
Floating at the Bottom of a Gravity Well



Race to the Bottom?



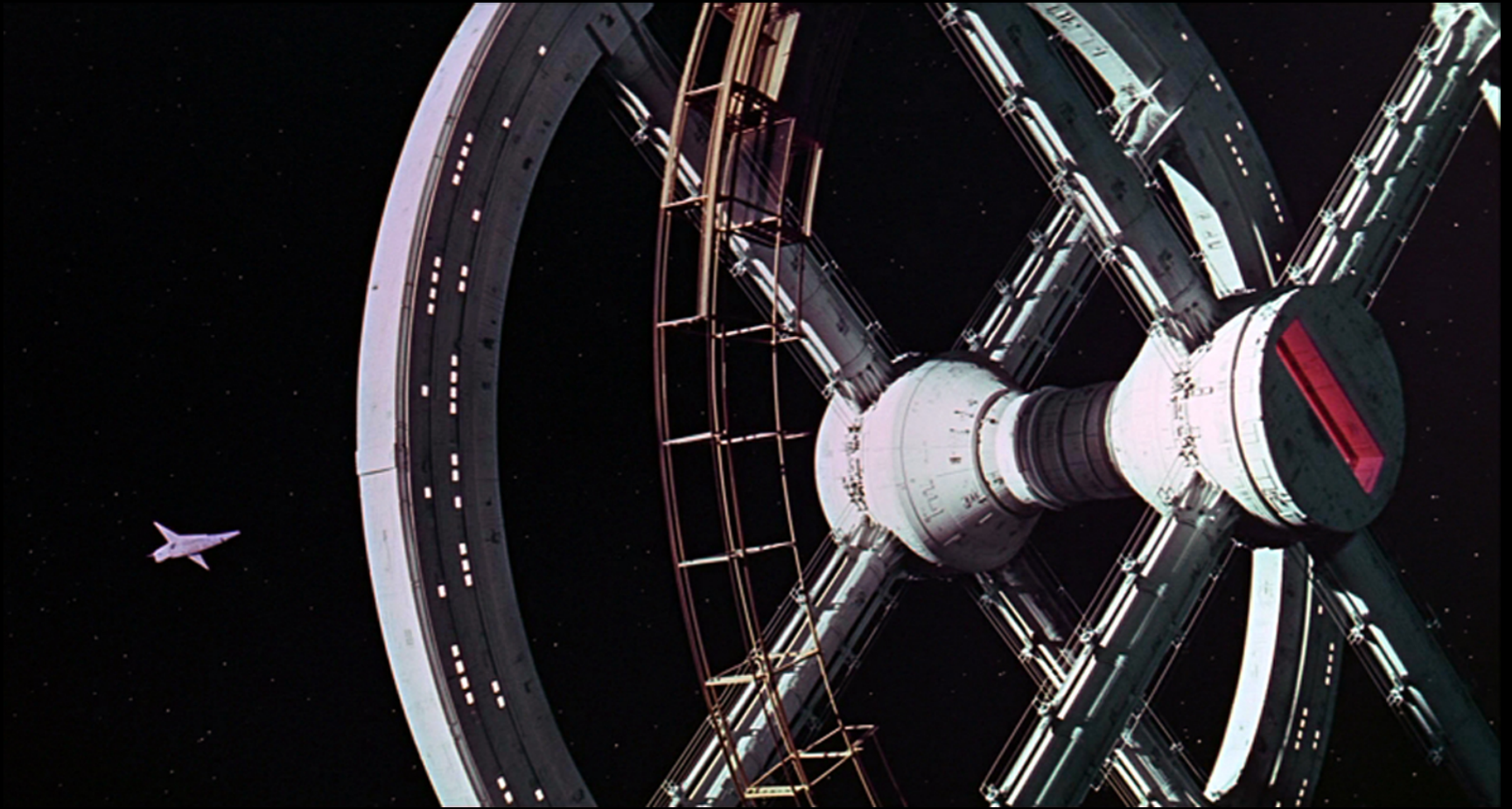
Race to the Bottom?



What We'd Like



What We'd Accept



What We Can Afford



What We Can Afford

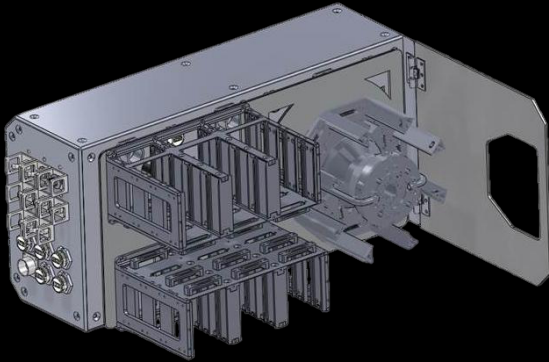


The MODEL, not the real thing...

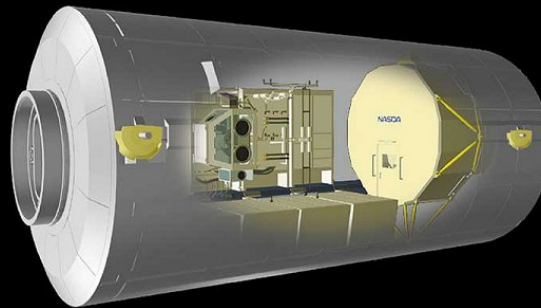
Yes, that's a slide rule...



Other Solutions (Using ISS)?



Nanoracks-Astrium
Centrifuge

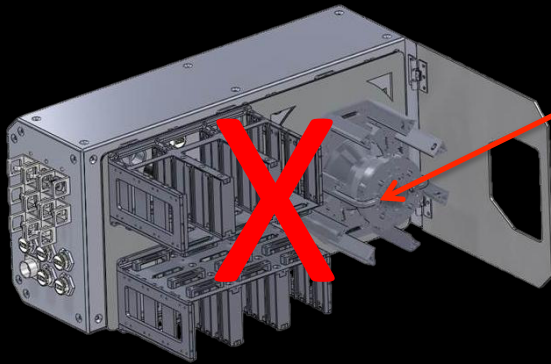


NASDA-JAXA
Centrifuge Accommodations
Module



NASA Nautilus-X
Centrifuge

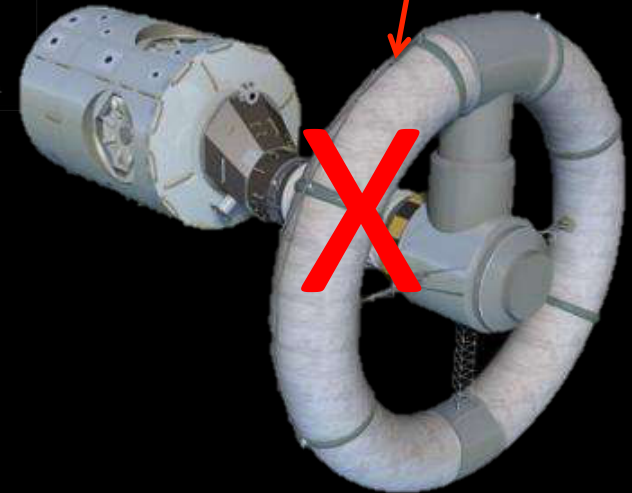
No!



Too small for multi-generational vertebrates



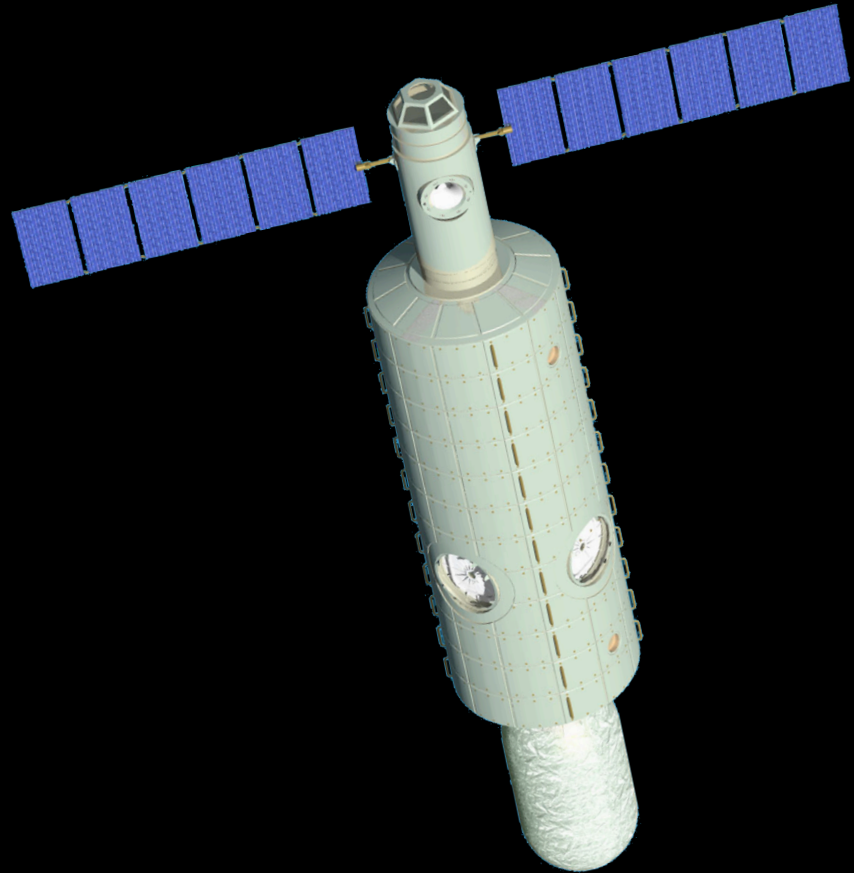
Too disruptive for ISS
(momentum & vibration issues)



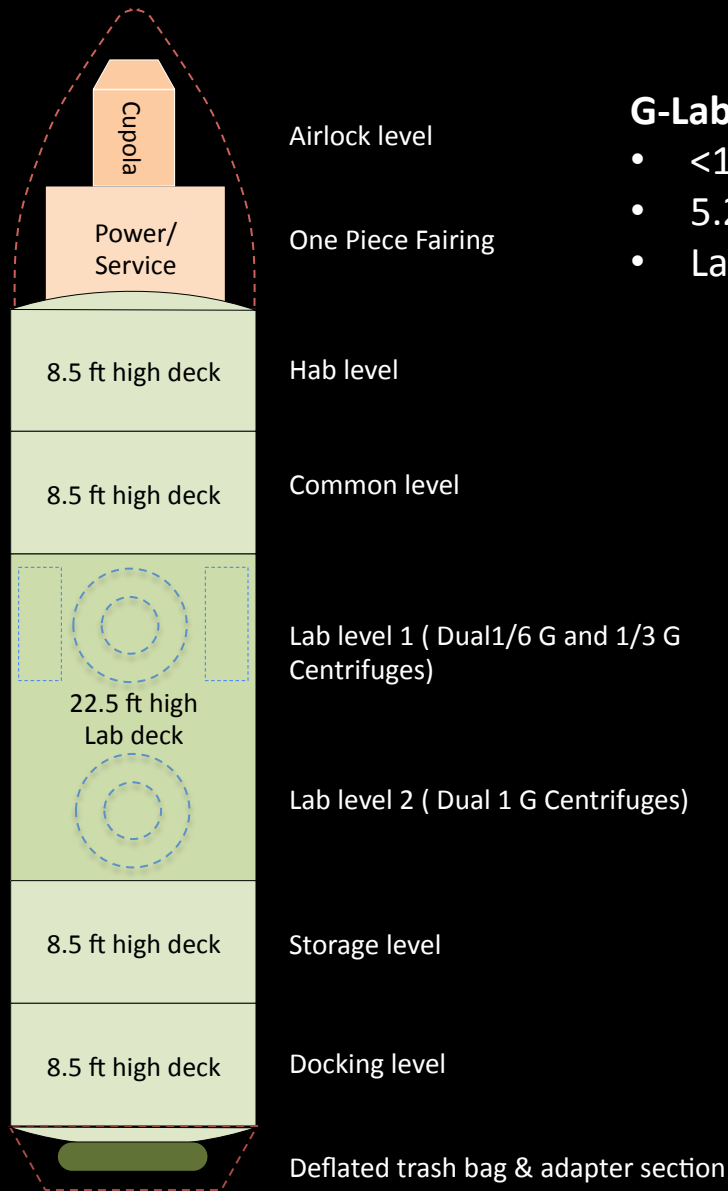
Too big for ISS

We Need a Dedicated Free Flyer

2012 SSI Proposal
– *remains the
smallest free
flyer that permits
multi-
generational
vertebrate
research*



G-Lab Launch *via* Single Falcon Heavy

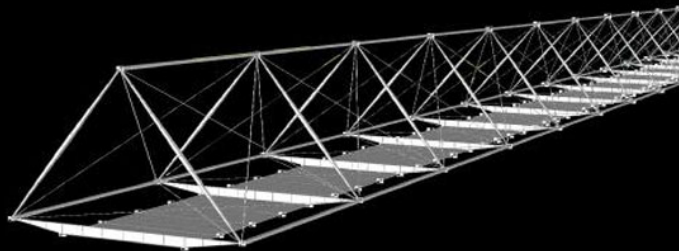


G-Lab on Falcon Heavy (Long Fairing)

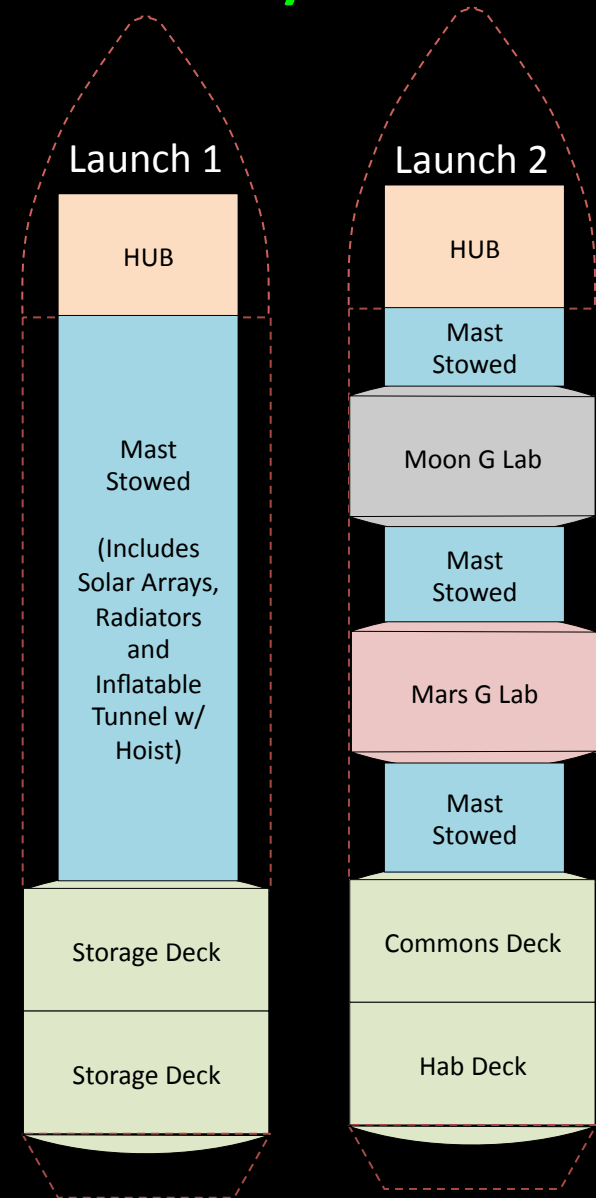
- <100K lbm target (117K advertised payload)
- 5.2M diameter (~200 inches or 17 ft.)
- Launch cost ~\$100M ± 30M?



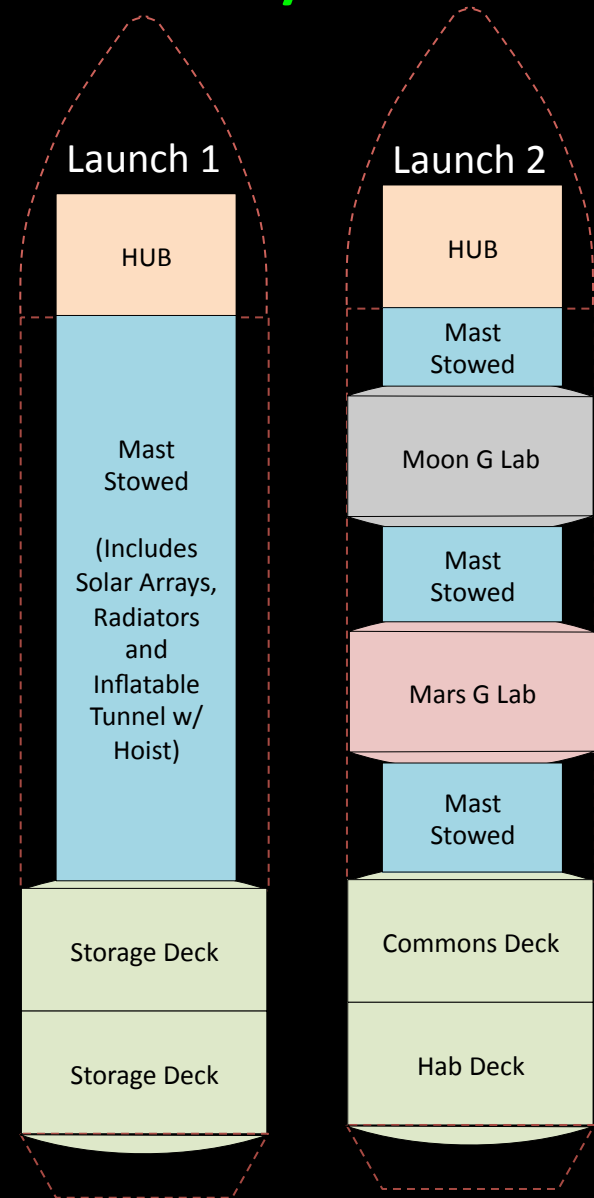
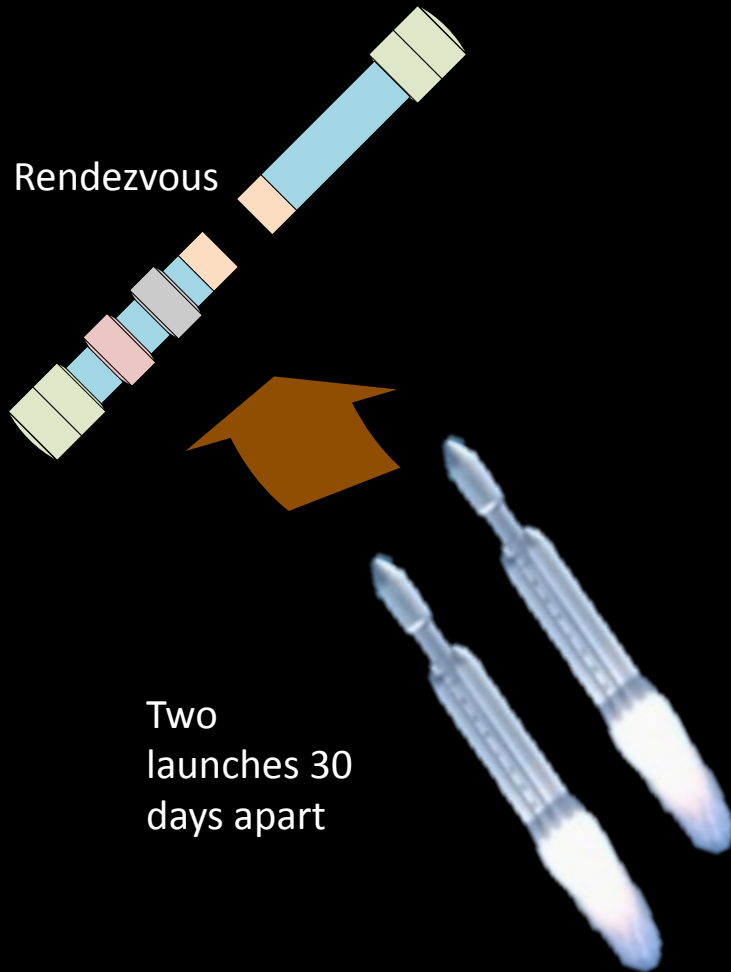
A New Dual-Launch Falcon Heavy G-Lab



Deployable Truss Mast with Integral Solar Array



A New Dual-Launch Falcon Heavy G-Lab



A New Dual-Launch Falcon Heavy G-Lab

